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EXAMINER

KRYLOVA, IRINA

ART UNIT

PAPER NUMBER

1764

NOTIFICATION DATE

DELIVERY MODE

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/598,842 | Applicant(s) MASAKI, KOJI | |
| | Examiner Irina Krylova | Art Unit 1764 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>06/16/10</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 7, 2010 has been entered.

Response to Amendment

2. The amendment filed by Applicant on October 7, 2010 has been fully considered. The amendment to claims 1, 3 is acknowledged. Specifically, claim 1 has been amended to include the limitations of the copolymer (C) comprising 20-60%mass of an aromatic vinyl compound and has a vinyl bond content in diene compound portion of 10-80%mass, and a difference in aromatic vinyl compound content between the copolymer (C) and the copolymer (B) is not more than 30%mass. The limitation was taken from original claim 3. All previous rejections are maintained. Further prior art search uncovered additional prior art reference which appears to render the present claims unpatentable. Thus, the new grounds of rejections are set forth below.

Claim Objections

3. Claim 9 is objected because of the following: Claim 9 which is dependent on claim 1, recites a rubber composition wherein the copolymer has a weight average molecular weight of more than 50,000 but not more than 150,000. However, it is not explicitly specified which of the copolymers is having that weight average molecular weight. Corrections should be made to specify the copolymer B) as having the cited specific molecular weight.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-5, 7-9, 15-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of commonly assigned

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U.S. Patent No 7,211,630. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

5. US patent 7,211,630 claims a rubber composition comprising a rubber component formed by compounding a styrene-butadiene copolymer (A) having a weight average molecular weight of 400,000-3,000,000 and bound styrene of 10-50% mass and vinyl bond content in butadiene portion is 20-70%, with 10-200 parts by mass of hydrogenated styrene-isoprene copolymer (B) based on 100 parts by mass of the copolymer (A) having a weight average molecular weight of 5,000-200,000 and bound styrene content is 25-70% mass and not less than 60% of double bond in isoprene portion is hydrogenated, and having the relationship between the bound styrene in polymer (A) and bound styrene in polymer (B) satisfying the following equation:
$$\text{Bound styrene (B)} > \text{bound styrene (A)} + 10 (\% \text{ mass}).$$

Therefore, the limitations claimed in the instant invention are obvious variants of the limitations claimed in US 7,211,630.

6. Claims 1-5, 7-9, 15-16 are directed to an invention not patentably distinct from claims 1-9 of commonly assigned U.S. Patent No 7,211,630.

Specifically, see the discussion in paragraphs 4-5 above.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP

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Chapter 2300). Commonly assigned US 7,211,630, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-12, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yokoyama et al** (US 5,959,039).

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8. Yokoyama et al discloses a rubber composition and a tire comprising the composition (as to instant claim 15), wherein the composition comprises:

A) 100 pbw of a high molecular weight polymer comprising a copolymer of vinyl aromatic hydrocarbon, specifically styrene (col. 4, lines 42-50), and conjugated diene, specifically butadiene (col. 4, lines 32-41), having a molecular weight of 300,000 to 1,500,000 (as to instant claim 3, col. 3, lines 34-25); wherein the content of bound styrene is not greater than 30%wt (col. 2, lines 1-7);

B) 30-120 pbw (col. 2, lines 25-28) of a low molecular weight polymer component comprising a copolymer of vinyl aromatic hydrocarbon, specifically styrene (as to instant claim 5, cited in col. 4, lines 42-50), and conjugated diene, specifically butadiene (as to instant claim 6, cited in col. 4, lines 32-41), having a molecular weight of 2,000 to **80,000** (as to instant claims 1, 8, 9, 16, cited in col. 2, lines 8-15; wherein the amount of bound styrene is not greater than 30%wt (col. 2, lines 13-15) and wherein each of the HMW polymer and LMW polymer satisfies the following formula:

$$S + (V/2) < 25,$$

Wherein S is an amount of bound styrene (%wt) and V represents a vinyl linkage content (%wt) (col. 2, lines 15-23).

9. Therefore, as can be seen from the above formula, the lower the styrene content in the rubber, the higher the vinyl linkage content may be. At the content of bound styrene being 10%wt (which is within the range of 5-80% of styrene, as claimed in the instant invention), the content of vinyl linkage may be up to 29.999%wt, which is also within the

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range of vinyl linkage 10-80%wt claimed in the instant invention (based on the mathematical calculation according to the above formula). For the high molecular weight copolymer, since **Yokoyama et al** discloses the styrene content being less than 30%, therefore, where the styrene content is 19.999% and vinyl bond is 10%, the ratio of $S+(V/2) = 19.999 + 10/2$ is 24.999, i.e. still less than 25. At the same time the value of styrene content being 19.999% of **Yokoyama et al** is very close to the value of styrene content being 20% as claimed in the instant invention; it is the examiner's position that the values are close enough that one of ordinary skill in the art would have expected the same properties. Case law holds that a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

10. Further, since **Yokoyama et al** discloses that both low molecular weight copolymer and high molecular weight copolymer contain less than 30% of bound styrene, therefore, it would have been obvious that the difference in aromatic content between high molecular weight copolymer and low molecular weight copolymer will not be more than 30%mass.

11. All ranges of the components in the composition of **Yokoyama et al** are overlapping with the corresponding ranges of the components of the composition claimed in the instant invention. It is well settled that where the prior art describes the

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components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir. 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974). In light of the cited case law, it would have been obvious that in this particular case the overlapping of all ranges of the components in the composition of **Yokoyama et al** with the corresponding ranges of the components of the composition claimed in the instant invention establish a prima facie case of obviousness as well.

12. As to instant claims 4 and 7, the HMW rubber and LMW rubber are produced by a solution polymerization or an emulsion polymerization (col. 4, lines 54-67).

13. The composition may further comprise natural rubber and/or synthetic rubber blended with the above composition (col. 5, lines 52-54).

14. As to instant claims 10-12, the composition may further comprise 50 pbw of a carbon black HAF filler (col. 10, lines 55-65).

15. Claims 2-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yokoyama et al** (US 5,959,039) in view of **Sasaka et al** (US 6,376,593).

16. The discussion with respect to **Yokoyama et al** (US 5,959,039) set forth in paragraphs 7-14 above, is incorporated here by reference.

17. Yokoyama et al (US 5,959,039) fails to specify the composition further comprising silica filler and softening agent.

18. Sasaka et al discloses a rubber composition and a tire formed by using the composition (as to instant claim 15) comprising:

1) 100 pbw rubber component comprising:

A) 5-50%wt of LMW butadiene rubber having molecular weight of 5,000-80,000;

B) 50-90%wt of styrene-butadiene rubber having bound styrene content of 15-45%wt and amount of vinyl bonding in the butadiene portion of 7-60%mol;

2) 40-95 pbw of silica (as to instant claims 10-11, cited in Abstract).

19. The composition further comprises carbon black of SAF class and process oils (col. 6, lines 1-3), wherein the composition comprises excellent wet skid performance and ice skid performance (col. 6, lines 43-49).

20. Since

1) **Yokoyama et al** discloses a rubber composition and a tire comprising the composition, wherein the composition comprises a high molecular weight polymer comprising a copolymer of styrene and butadiene, having a molecular weight of 300,000

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to 1,500,000; wherein the content of bound styrene is not greater than 30%wt (col. 2, lines 1-7); and a low molecular weight polymer component comprising a copolymer of styrene and butadiene, having a molecular weight of 2,000 to 80,000; but fail to specify the composition further comprising silica filler and softening agent;

2) Sasaka et al discloses a rubber composition and a tire formed by using the composition, similar to that of **Yokoyama et al**, but further specifies the use of silica and process oils, wherein the composition comprises excellent wet skid performance and ice skid performance (col. 6, lines 43-49); therefore,

It would have been obvious to a one of ordinary skill in the art at the time of the invention was made to add silica filler and process oil in the composition of **Yokoyama et al**, as taught by **Sasaka et al**, to further improve wet skid performance and ice skid performance of the tire of **Yokoyama et al** as well.

21. Claims 1-11, 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kawauzra et al** (US 5,679,744).

22. Kawauzra et al discloses a rubber composition and a tire (as to instant claim 15), wherein the composition comprises (col. 3, lines 6-50):

A) 100 pbw of combination of:

- 1) 30-70%wt (col. 3, lines 40-45) of a natural rubber;
- 2) 70-30%wt of a styrene-butadiene rubber (SBR) having styrene content of not more than 50%wt and vinyl content satisfying the relationship of $V_n < 2S_t + 30$ (col. 4,

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lines 55-62); and

B) 2-20 pbw of styrene-butadiene block copolymer having styrene content of not more than 50%wt (col. 4, lines 62-67) and block a) having vinyl bond content of 5-30%wt and block b) having vinyl bond content of 73-80% (col. 5, lines 60-67; col. 6, lines 1-5) and the molecular weight of 50,000-800,000 (as to instant claims 1, 8, 9, 16, cited in col. 6, lines 49-54).

23. Kawauzra et al further teaches that SBR may be any SBR used as a rubber component for various rubber applications (col. 11, lines 58-65) and shows specific examples of SBR having a weight average molecular weight of 867,000; styrene content of 47%wt and vinyl content of 75%mol (Table V-1) or weight average molecular weight of 320,000; styrene content 41%wt and vinyl content of 37%mol (Table V-2). Thus, it appears that SBR component A-2 above corresponds to high molecular weight component C) as claimed in the instant invention. The block copolymer component B) of **Kawauzra et al** shown above having the molecular weight of 50,000 to 800,000 appears to correspond to low molecular weight component B) having molecular weight of 50,000 to 300,000 as claimed in the instant invention.

24. All ranges in the composition of **Kawauzra et al** are overlapping with the corresponding ranges in the composition claimed in the instant invention. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74

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USPQ2d 1951, 1953 (Fed. Cir 2005); In re Peterson, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); In re Woodruff, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); In re Malagari, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974). In light of the cited patent case law, it would therefore have been obvious that in this particular instance overlapping of all ranges in the composition of **Kawauzra et al** and those claimed in the instant invention establish a prima facie case of obviousness as well.

25. As to instant claims 13-14, the composition further comprises 5-50 pbw of softening agent (col. 6, lines 55-65).

26. As to instant claims 10-11, the composition further comprises 20-90 pbw of any generally used carbon black filler (col. 17, lines 29-34).

27. As to instant claim 4, the styrene-butadiene rubber is produced by a solution or emulsion polymerization (col. 15, lines 60-67).

28. Claims 2-16 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kawauzra et al** (US 5,679,744) in view of **Yokoyama et al** (US 5,959,039).

28. The discussion with respect to **Kawauzra et al** (US 5,679,744) set forth in paragraphs 21-27 above, is incorporated here by reference.

29. Kawauzra et al fails to specify the carbon black filler being of HAF or SAF class.

30. Yokoyama et al discloses a rubber composition and a tire comprising the composition, wherein the composition comprises a high molecular weight polymer comprising a copolymer of styrene and butadiene, having a molecular weight of 300,000 to 1,500,000; wherein the content of bound styrene is not greater than 30%wt (col. 2, lines 1-7); and a low molecular weight polymer component comprising a copolymer of styrene and butadiene, having a molecular weight of 2,000 to 80,000; wherein the composition further comprises 50 pbw of a carbon black HAF filler (col. 10, lines 55-65).

31. Since **Kawauzra et al** discloses a rubber composition for making tires comprising any generally used carbon black filler, but fails to specify the filler being HAF or SAF class; **Yokoyama et al** discloses a rubber composition, similar to that of **Kawauzra et al**, but specifies the use of carbon black HAF filler, therefore, it would have been obvious to a one of ordinary skill in the art at the time of the invention was made to use the carbon black HAF filler of **Yokoyama et al** in the composition of **Kawauzra et al** since it would have been obvious to substitute one equivalent for another used for the same purposes. Case law holds that the selection of a known material based on its suitability for its intended use supports prima facie obviousness. *Sinclair & Carroll Co vs. Interchemical Corp.*, 325 US 327, 65 USPQ 297 (1045). Case law holds that the mere substitution of an equivalent (something equal in value or meaning, as taught by

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analogous prior art) is not an act of invention; where equivalency is known to the prior art, the substitution of one equivalent for another is not patentable. See *In re Ruff* 118 USPQ 343 (CCPA 1958).

32. **Claims 1-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Masaki et al** (WO 2004/011545). It is noted that while the rejection is made over WO 2004/011545 for date purposes, in order to elucidate the examiner's position the corresponding US equivalent viz. US 7,211,630 is relied upon. All citations to paragraph numbers, etc., below refer to US 7,211,630.

33. **Masaki et al** discloses a rubber composition comprising (as to instant claims 1-3, 5):

A) a 100 pbw of styrene-butadiene copolymer having a weight average molecular weight of 700,000-2,500,000 (col. 2, lines 40-43); styrene content of 20-40%mass and vinyl bond content of butadiene portion of 30-60% (col. 2, lines 45-50);

B) 10-200 pbw of styrene-isoprene copolymer, having weight-average molecular weight of 5,000-200,000 (as to instant claim 8), styrene content of 25-70%mass and not less than 60%of double bond in isoprene portion is hydrogenated, wherein:

styrene content of polymer (B) > styrene content of polymer (A) + 10%mass (col. 2, lines 28-44).

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34. All ranges in the composition of **Masaki et al** are overlapping with corresponding ranges in the composition claimed in the instant invention. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974). In light of the cited patent case law, it would therefore have been obvious that in this particular instance the overlapping of all ranges in the composition of **Masaki et al** and claimed in the instant invention, establishes a prima facie case of obviousness as well.

35. As to instant claims 4, the styrene-butadiene copolymer A) is obtained by copolymerizing butadiene and styrene in hydrocarbon solvent (Col. 4, lines 37-40).

36. As to instant claim 6, since isoprene is 2-methyl-1,3-butadiene, therefore, it appears to be a butadiene derivative, i.e. broadly appears to be a butadiene. Since isoprene is a butadiene derivative, therefore, it would have been obvious to a skilled artisan to use a non-substituted butadiene as well since it would have been obvious to substitute one equivalent for another used for the same purposes. Case law holds that the selection of a known material based on its suitability for its intended use supports prima facie obviousness. *Sinclair & Carroll Co vs. Interchemical Corp.*, 325 US 327, 65

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USPQ 297 (1045). Case law holds that the mere substitution of an equivalent (something equal in value or meaning, as taught by analogous prior art) is not an act of invention; where equivalency is known to the prior art, the substitution of one equivalent for another is not patentable. See *In re Ruff* 118 USPQ 343 (CCPA 1958).

37. As to instant claim 7, the copolymer B) is solution-polymerized rubber (col. 5, lines 30-40).

38. The rubber composition may further be blended with natural rubber and carbon black (col. 5, lines 42-50).

39. As to instant claims 11-12, the carbon black is ISAF class (Table 1).

40. As to instant claim 15, the composition is used for making pneumatic tire (Title).

41. As to instant claims 13-14, **Masaki et al** discloses the use of 20 parts by mass of aromatic oil (Table 3). Given component B) is used in amount of 10-200 parts by mass, therefore, it would have been obvious to a one skilled in the art that the total amount of the copolymer B) and aromatic oil will be within the ranges of those as claimed in the instant invention (5-60 parts by mass).

42. Claims 3-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Masaki et al** (WO 2004/011545) in view of **Yokoyama et al** (US 5,959,039). It is noted that while the rejection is made over WO 2004/011545 for date purposes, in order to elucidate the examiner's position the corresponding US equivalent viz. US 7,211,630 is relied upon. All citations to paragraph numbers, etc., below refer to US 7,211,630.

43. The discussion with respect to **Masaki et al** set forth in paragraphs 32-41 above is incorporated here by reference.

44. Masaki et al does not teach the carbon black filler being used in amount of 30-90 parts by mass and the carbon black filler being of HAF class, and further does not explicitly specify the low molecular weight copolymer being styrene-butadiene.

45. Yokoyama et al discloses a rubber composition and a tire comprising the composition, wherein the composition comprises:

A) 100 pbw of a high molecular weight polymer comprising a copolymer of vinyl aromatic hydrocarbon, specifically styrene and conjugated diene, specifically butadiene having a molecular weight of 300,000 to 1,500,000

B) 30-120 pbw of a low molecular weight polymer component comprising a copolymer of vinyl aromatic hydrocarbon, specifically styrene (col. 4, lines 42-50), and conjugated diene, specifically butadiene (col. 4, lines 32-41), having a molecular weight of 2,000 to **80,000** (col. 2, lines 8-15); wherein the composition further comprises 50 pbw of carbon black of HAF class (col. 10, lines 55-58) and the composition has excellent low-temperature flexibility, good gripping properties (col. 1, lines 10-13; col. 2, lines 66-67).

46. Thus, based on the teachings of **Masaki et al** and **Yokoyama et al**, it would have been obvious to a one of ordinary skill in the art to include carbon black of HAF class in

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amount disclosed by **Yokoyama et al** and also to use styrene-butadiene copolymer as low molecular weight copolymer, in the composition of **Masaki et al** to ensure the composition of **Masaki et al** having excellent low-temperature flexibility, good gripping properties, as taught by **Yokoyama et al**, as well (col. 1, lines 10-13; col. 2, lines 66-67 of **Yokoyama et al**).

Response to Arguments

47. Applicant's arguments filed on October 7, 2010 have been fully considered.

48. Regarding the rejections of claims 1-12, 15-16 under 35 U.S.C. 103(a) as being unpatentable over **Yokoyama et al** (US 5,959,039) and claims 2-16 under 35 U.S.C. 103(a) as being unpatentable over **Yokoyama et al** (US 5,959,039) in view of **Sasaka et al** (US 6,376,593), Applicant argues that

a) **Yokoyama et al** discloses at col. 4, lines 12-14 that 25 or more value of $S+(V/2)$ should be avoided because deterioration in the low-temperature flexibility occurs, thus teaching away from using a copolymer (C) comprising 20-60%mass of an aromatic vinyl compound and having a vinyl bond content in the diene portion of 10-80%mass, because when S is 20-60 and V is 10-80, $S+(V/2)$ is 25 or more;

b) **Sasaka et al** discloses a rubber composition comprising low molecular weight butadiene rubber having Mw of 5,000 to 80,000 and styrene-butadiene rubber; however, the low molecular weight polymer of **Sasaka et al** does not comprise an aromatic vinyl compound;

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c) as presently claimed, the difference in the aromatic vinyl compound content between high molecular weight copolymer and low molecular weight copolymer should not exceed 30%mass.

49. Examiner disagrees.

1) For the high molecular weight copolymer, since **Yokoyama et al** discloses the styrene content being less than 30%, therefore, given the styrene content is 19.999% and vinyl bond is 10% (which is the same as claimed in the instant invention), the ratio of $S+(V/2) = 19.999 + 10/2$ is 24.999, i.e. still less than 25. At the same time the value of styrene content being 19.999% of **Yokoyama et al** is very close to the value of styrene content being 20% as claimed in the instant invention; it is the examiner's position that the values are close enough that one of ordinary skill in the art would have expected the same properties. Case law holds that a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

2) Further, since **Yokoyama et al** discloses that both low molecular weight copolymer and high molecular weight copolymer contain less than 30% of bound styrene, therefore, it would have been obvious that the difference in aromatic content between high molecular weight copolymer and low molecular weight copolymer will not be more than 30%mass.

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3) Though **Sasaka et al** discloses the butadiene rubber being used as a low molecular weight rubber rather than styrene-butadiene rubber, nevertheless, **Sasaka et al** is a secondary reference which was applied to show that silica along with carbon black of SAF class and process oils can be used in a rubber composition comprising both low molecular weight and high molecular weight copolymers. Secondary reference does not need to teach all limitations. "It is not necessary to be able to bodily incorporate the secondary reference into the primary reference in order to make the combination." *In re Nieveit*, 179 USPQ 224 (CCPA 1973).

50. Regarding the rejections of claims 1-11, 13-16 under 35 U.S.C. 103(a) as being unpatentable over **Kawauzra et al** (US 5,679,744) and claims 2-16 under 35 U.S.C. 103(a) as being unpatentable over **Kawauzra et al** (US 5,679,744) in view of **Yokoyama et al** (US 5,959,039), Applicant argues that in Table II-1 **Kawauzra et al** discloses the use of a block copolymer having a weight average molecular weight of 85,000, but does not disclose a styrene-butadiene copolymer having a weight average molecular weight of not less than 300,000. In Table V-2 **Kawauzra et al** uses SBR having a weight average molecular weight of 320,000, styrene content of 41% and vinyl content of 37%mol, however, the block copolymer in Table V-2 a weight average molecular weight of 500,000. Based on the teachings of **Kawauzra et al** one skilled in the art would not expect good processability results when used the copolymer B) of not more than 300,000.

51. Examiner disagrees.

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Kawauzra et al teaches that SBR may be any SBR used as a rubber component for various rubber applications (col. 11, lines 58-65) and shows specific examples of SBR having a weight average molecular weight of 867,000; styrene content of 47%wt and vinyl content of 75%mol (Table V-1) or weight average molecular weight of 320,000; styrene content 41%wt and vinyl content of 37%mol (Table V-2). Thus, it appears that SBR component A-2 above corresponds to high molecular weight component C) as claimed in the instant invention. On the other side, the block copolymer component B) of **Kawauzra et al** having the molecular weight of 50,000 to 800,000 appears to correspond to low molecular weight component B) having molecular weight of 50,000 to 300,000 as claimed in the instant invention. Thus, **Kawauzra et al** teaches that the block copolymer component may have a weight average molecular weight as low as 50,000. Even though **Kawauzra et al** does not provide a specific example of using SBR having Mw of 320,000 with a block copolymer having Mw of less than 300,000, however, this does not negate a finding of obviousness under 35 USC 103 since a preferred embodiment such as an example is not controlling. Rather, all disclosures "including unpreferred embodiments" must be considered. In re Lamberti 192 USPQ 278, 280 (CCPA 1976) citing In re Mills 176 USPQ 196 (CCPA 1972). Therefore, it would have been obvious to one of ordinary skill in the art to utilize a block copolymer having Mw of 50,000 to 300,000 in combination with SBR having Mw of 320,000 as well given that this range of Mw of 50,000 to 300,000 of is within the teachings of **Kawauzra et al** (Mw of 50,000 to 800,000) as well.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina Krylova whose telephone number is (571)270-7349. The examiner can normally be reached on Monday-Friday 8:00am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Irina Krylova/
Examiner, Art Unit 1764

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1764

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